

INFLUENCE OF GEOGRAPHIC AND CULTURAL FACTORS ON CONSANGUINITY IN CERTAIN COMMUNITIES OF KANYAKUMARI DISTRICT

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Abstract: The rate of consanguineous unions or blood related marriages varies by region and religion influenced by so many geographic and cultural factors. Marital distance, residential area, caste and parental consanguinity were some of the geographic and cultural factors chosen to study their influence over consanguinity among certain communities in Kanyakumari district. The communities chosen were Pallar, Sambavar, Bharathar, Paravan, Thandan, Chetty, Chakkalar, Kammalar, Kanikkar and Kattunayakan. Spouses resided below 10 Km radius contracted consanguineous unions at a higher rate (Paravans, 71.4%, Thandans, 66.3%, Sambavars, 50.5%, Chakkalars, 67.8% and Kanikkars, 51.4%) followed by 30 to 39 km. The percentage of consanguinity was more among the rural residents of Pallar (58.5%), Bharatar (59.4%), Paravan (69.3%), Thandan (58.7%), Chakkalar (58.8%) and Kammalar (62.3%) and in urban residents of Sambavars (51.2%), Chetty (64.6%), Kanikkar (52.2%) and Kattunayakan (70.6%). The percentage of consanguineous unions was higher among Kattunayakans (69.6%) and low among Sambavars (40.6%). More than 60% consanguinity was recorded among Kattunayakans (69.6%), Kammalars (60.5%) and Paravans (66.1%), between 50 to 60% among Bharatars (59.2%), Chakkalars (57.4%), Thandans (55.5%) and Pallars (54.6%). The rate of consanguinity below 50% was noticed among Kanikkars (47.1%) and Sambavars (40.6%). Highly significant association between caste system and the practice of consanguinity was found. The rate of offspring consanguinity was higher in families with previous history of parental consanguinity. Significant association between parental consanguinity and rate of consanguinity was observed only among Kammalars (high) and Chakkalars (low). The present study shows the influence of caste on the rate of consanguinity in the selected communities of Kanyakumari District than the other factors.

Index Terms - Consanguineous, Communities, Factors, Geographic, Cultural

I. INTRODUCTION

The rate of consanguinity is found more in Muslim countries especially in Middle East, Pakistan and Iran (Ullah et al., 2017, Shavazi et al., 2008). In Western world, Europe, USA, Lebanon, Morocco, Saudi Arabia, Kuwait, Israel, Arab, Jordan and Palestine territories, declining trend of consanguinity has been noticed (Khlal, 1985, Lamdouar, 1994, Al-Abdul Kareem and Ballal, 1998, Radovanovic et al., 1999, Jaber et al., 2000, Zlotogora et al., 2002). So many socio-economic, socio-demographic, geographic and cultural factors are responsible for the varied rate of consanguinity. Consanguinity is very much associated with the residential area of the subjects, whether rural or urban (Hussain and Bittles, 2004). Pillai and Mathew (1995) have shown strong urban-rural effect in a few castes of closely located Thiruvananthapuram District of Kerala state. However, Jurdi and Saxena (2003) observed no statistically significant difference in the prevalence of consanguinity by place of residence and geographical region in Yemen. The studies highlighting correlation between marital distance and inbreeding rate was made in Brazil, Japan, India etc (Babu et al., 1994). Negative association between marital distance and level of consanguinity was noticed by Joseph (2001). The reason for higher percentage of consanguinity at least distance may be due to the indigenous, isolated nature and possibilities of selecting marriage partners. Deshorjit and Nabakumar (2010) compared their findings with

those of an earlier one (Manibabu, 1997) on Phayeng, a tribal population of Manipur, that decrease in the incidence of consanguine marriage and increase in the marital distance is related with the prevailing socio-cultural conventions and practices of the people. Marriage practice is one of the major criteria in influencing consanguinity. Caste system also has influence on consanguinity because of the prohibition towards outside marriages. Caste and parental consanguinity have highly significant positive association with consanguinity. In India, caste system is a major trend where peoples are identified by the names of caste. South India, Andhra Pradesh, Karnataka, Kerala and Tamil Nadu recorded wide range of consanguinity between castes. Some of the caste wise variation in Andhra Pradesh include, lower marriage payments among consanguineous couples of Desuri Kapu, Devanga and Mala (Reddy, 1988), variation in marital distance among consanguineous and non-consanguineous families in Rajaka caste of Andhra Pradesh (Parvatheesam and Babu, 1997) and variation in frequency of consanguinity among, Telaga (38%), Segidi (28%), Kapu farmers (49%) and Jalari fisherman (47%) (Das, 2003). Parental consanguinity is one of the major factors which favours and increases the rate of consanguinity (Joseph *et al.*, 2015, Bener *et al.*, 1996).

II. MATERIALS AND METHODS

The data regarding geographic and cultural factors of consanguinity was collected from ten communities chosen from Kanyakumari district by direct home visit. The ten communities include Pallar, Bharatar, Paravan, Thandan, Sambavars, Chetty, Chakkalar, Kammalar, Kanikkar and Kattunayakan. Totally 6922 data was collected. The geographic and cultural factors include marital distance, residential area, caste and parental consanguinity. The marital distance was classified in to five, distance below 10km, 10 to 19km, 20 to 29 km, 30 to 39 km and distance above 40 km, residential area was classified in to urban and rural, castes include the selected ten communities and parental consanguinity in to families with parental consanguinity and families without parental consanguinity. The data was used to study the influence of all these factors over the rate of consanguinity among the study groups.

III. RESULTS AND DISCUSSION

The rate of consanguinity is influenced by so many factors including geographic as well as cultural. Studies on marriage pattern and marital distance have their own merit of great significance, for they, as the important variables in population genetics, can throw light on the understanding of the structure of contemporary human populations. From the Table 1 it is evident that spouses residing below 10 Km radius contracted consanguineous unions at a higher rate (Paravans, 71.4%, Thandans, 66.3%, Sambavars, 50.5%, Chakkalars, 67.8% and Kanikkars, 51.4%). This was followed by 30 to 39 km (Pallars, 82.1%, Kattunayakans, 100% and Bharatars, 100%) and 20 to 29 Km (Chetties, 67.7% and Kammalars, 68.8%). Highly significant association (1%) was found between consanguinity and marital distance among Bharatar. People generally tend to select their partner from within some limited region and hence space and distance can be prime determinants of population structure conjoined with other factors (Reddy, 1983). The inbreeding can also occur sometimes, when in a widely spread/scattered endogamous community in a larger area, people prefer to marry within a short or limited physical distance for convenience without knowing the fact that they are going to marry to a blood relative. It must be kept in mind that those people concentrated in particular surrounding area who have settled there in the distant past, are the ultimately blood relatives and belong to the same original stock and share the common normal or abnormal gene pool of a community. Thus, the random marriage within a short physical marital distance is an additional dimension of inbreeding (Alvarez *et al.*, 2009). Literature pertaining the association between marital distance of spouses and consanguinity is meagre. Significant negative association between marital distance and consanguinity was reported by Araujo and Salzano, (1974). Parvatheesam and Babu (1997) studied the relationship between marital distance and rate of consanguinity of Rajaka endogamous group and reported higher mean marital distance among non-consanguineous couples (35.30 ± 5.43 km) than consanguineous couples (23.25 ± 5.47 km). Relatively small population size clubbed with small marital distance leads to inbreeding resulting in homozygosity which increases the chance of offspring affected by recessive or deleterious traits and contributes to decreased fitness of a couple or population (Balgir, 2013). To study the effect of marital distance on consanguinity, the distance was classified within a range of 10 Km from the native place of the spouses and the results are presented in Table 1. The present study showed reduction in the rate of consanguinity with increasing marital distance among the five castes (Paravan, Thandan, Sambavar, Chakkalar and Kanikkar). Other five castes (Pallar, Bharatar, Chetty, Kammalar and Kattunayakkan) recorded higher consanguinity rate between the distances of 20-39 km. The rate of consanguinity was 100% among Bharatars and Kattunayakans at the distance between

30 and 39 km. No castes record highest consanguinity rate beyond 40 km. The reason for this is the tendency to take spouse within limited space.

Table 1 Frequency of consanguinity by the level of marital distance for different castes

% of Consanguinity - Marital distance					
Caste	<10	10-19.	20 - 29	30 - 39	≥40
Pallar	62.4	35.6	52.9	82.1	40.2
Bharatar**	65.3	55.8	48.4	100	46.7
Paravan	71.4	60.9	66.2	57.5	70.1
Thandan	66.3	53.1	25.5	62.1	44.7
Sambavar	50.5	33.8	27.1	34.1	47.7
Chetty	61.4	53.9	67.7	57.1	57.6
Chakkalar	67.8	66	56.8	31.6	34.9
Kammalar	63.2	58.9	68.8	52.2	52.9
Kanikkar	51.4	51	40	43.5	41.7
Kattunayakan	75.9	73.9	57.1	100	67

****Significant at 0.01 level, *Significant at 0.05 level**

Residential area is one of the important factor which determines the rate of consanguinity. Lower consanguinity rates recorded among urban residents is usually due to advanced socio-economic status and high literacy rates. On the other hand rural inhabitants continue to prefer and practice consanguinity since they prefer an extended family system (Bittles, 2001). Table 2 shows the percentage of consanguinity based on the residential area. The percentage of consanguinity was more among the rural residents of Pallar (58.5%), Bharatar (59.4%), Paravan (69.3%), Thandan (58.7%), Chakkalar (58.8%) and Kammalar (62.3%) and in urban residents of Sambavars (51.2%), Chetty (64.6%), Kanikkar (52.2%) and Kattunayakan (70.6%). Significant association between consanguinity and residential area was observed between Thandan and Kanikkar. The present study recorded more consanguinity in rural area (54.5%) which did not vary much from that of the urban (53.9%). Many studies reported the incidence of higher consanguinity rate in rural area (Pillai and Mathew, 1995; Sudhakaran and Vijayavalli, 1996; Hussain and Bittles, 2004; Othman and Saadat, 2009; Sedehi *et al.*, 2012; Lekshmi and Sudhakaran, 2012). Despite the declining consanguinity rate due to urbanization and socio-economic and lethargic advancements, in many societies these factors still have little or no influence on the preference for related marriage. The rate of consanguinity by the residential area in the ten castes studied is presented in the Table 2. The results show highly significant association with rural residence among Thandans and less significant association with urban residents of Kanikkar. Among Pallars, Bharatars, Paravans, Thandans, Chakkalars and Kammalars the percentage of consanguinity was high among rural residents but Sambavar, Chetty, Kanikkar and Kattunayakan castes showed more consanguinity among urban residents. Similar observations as above were reported for most other communities studied by Vasanthakumari (2003) from the same district. Pillai and Mathew (1995) have shown strong urban-rural effect in a few castes of closely located Thiruvananthapuram District of Kerala state. However, Jurdi and Saxena (2003) observed no statistically significant difference in the prevalence of consanguinity by place of residence and geographical region in Yemen. Khan and Mazhar (2018) in a hospital-based study from Pakistan reported that 70.8% of women married to cousins were living in rural areas and 29.2% were living in urban regions. Women hailing from rural areas were in strong favour of consanguineous marriages unlike women who were living in urban cities.

Table 2 Frequency of consanguinity by the level of residential area for different castes

% of Consanguinity - Residential area		
Caste	Urban	Rural
Pallar	46	58.5
Bharatar	58.9	59.4
Paravan	60.5	69.3
Thandan**	48.1	58.7
Sambavar	51.2	35.6
Chetty	64.6	58.7
Chakkalar	53.6	58.8
Kammalar	56.6	62.3
Kanikkar*	52.2	44.5
Kattunayakan	70.6	69.1

**Significant at 0.01 level, *Significant at 0.05 level

Caste is an important factor in determining the rate of consanguinity because each and every caste has its own cultural or traditional practice which influence consanguinity to a certain extent. Numerous researches in consanguineous marriages were carried out throughout the world in many populations. Consanguinity study carried out among ten castes of Kanyakumari district and the percentage is shown in the Table 3. The percentage of consanguineous unions was higher among Kattunayakans (69.6%) and low among Sambavars (40.6%). Consanguinity more than 60% was recorded among Kattunayakans (69.6%), Kammalars (60.5%) and Paravans (66.1%), between 50 to 60% among Bharatars (59.2%), Chakkalars (57.4%), Thandans (55.5%) and Pallars (54.6%). Consanguinity below 50% was noticed among Kanikkars (47.1%) and Sambavars (40.6%). Association between caste system and the practice of consanguinity was found to be highly significant. In Kerala varied frequencies of consanguineous unions were reported in many castes which include Mudugars (78.74%), Irulars (72.20%) (Joseph and Mathew, 2005), Christian Mala Arayas (1.55%), Kurumbapulaya tribe (97.03%) and Chakilian, Pallan, Parayan and Muthuvan (10-30%) (Mathew and Jyothilekshmi, 2017). In Kanyakumari district, 15 castes like Nair, Vellala, Nadar, Muslim, Viswakarma, Chetty, Saliyar, Krishnavaka, Vaniyar, Yadava, Bharatar, Sambavar and Vetan recorded frequency variation between 6.16% and 46.80% (Vasanthakumari, 2003). In the present study Sambavars recorded least percentage of 40.6 and Kattunayakans the highest of 69.6%.

Table 3 Frequency of consanguinity by the caste of spouses

Name of castes	Consanguinity			
	Yes		No	
	Count	Percent	Count	Percent
Pallar	571	54.6	474	45.4
Bharatar	306	59.2	211	40.8
Paravan	265	66.1	136	33.9
Thandan	447	55.5	358	44.5
Sambavar	428	40.6	627	59.4
Chetty	374	60.3	246	39.7
Chakkalar	182	57.4	135	42.6
Kammalar	611	60.5	399	39.5
Kanikkar	473	47.1	531	52.9
Kattunayakan	103	69.6	45	30.4

$\chi^2 = 168.91^{**}$, $p = 0.000$

To study the percentage and effect of parental consanguinity, the families were categorized into two; families with parental consanguinity and families without parental consanguinity. The frequency of consanguinity was found more among the couples with parental consanguinity (68.6%). In the present study all the ten castes showed higher percentage of consanguinity among the consanguineous families. Highest consanguinity among the families with parental consanguinity was observed among Paravans and Kattunayakans (Table 4). The reasons suggested for higher rate of consanguinity among consanguineous families may be to keep the family property in, for family bonding, willingness among cousins to marry themselves etc. (Hussain, 1999). Parental consanguinity and the percentage of offspring consanguinity are

shown in Table 4. From the table it is clear that the rate of offspring consanguinity was higher in families with previous history of parental consanguinity. Significant association was observed only among Kammalars (high) and Chakkalars (low).

Table 4 Frequency of consanguinity by the level of parental consanguinity for different castes

% of consanguinity - Parental consanguinity		
Caste	Yes	No
Pallar	70.6	47
Bharatar	63.3	55
Paravan	85.8	47.1
Thandan	75.5	48
Sambavar	54	35.2
Chetty	62.5	58.7
Chakkalar*	65.3	52.6
Kammalar**	65.5	55.4
Kanikkar	74.2	29.3
Kattunayakan	85.4	45.8

**Significant at 0.01 level, *Significant at 0.05 level

IV. CONCLUSION

The present study on consanguinity evidence the influence of caste, parental consanguinity and marital distance on the rate of consanguinity. To keep their family property within them and for the better understanding among the family members increases the incidence of consanguineous unions in many families. The offspring of consanguineous parents preferred to marry their cousins more. Some castes preferred consanguineous unions more because of their custom and tradition and the distance also played significant role in the rate of consanguinity. In this study residential area had no much effect on the rate of consanguinity which may be due to the enhancement of education throughout the district and caste was found to have more influence.

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